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SCIENTIFIC INTELLIGENCE MEMORANDUM

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THE UNITED ARAB REPUBLIC MISSILE PROGRAM

OSI-SM/63-3

26 February 1963

CENTRAL INTELLIGENCE AGENCY

OFFICE OF SCIENTIFIC INTELLIGENCE

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Scientific Intelligence Memorandum

THE UNITED ARAB REPUBLIC MISSILE PROGRAM

NOTICE

The brief estimate contained herein on the salient features of this developing situation represents the immediate views of the Office of Scientific Intelligence.

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PREFACE

The existence of a United Arab Republic (UAR) program for the development of surface-to-surface ballistic missiles utilizing Western European technicians has been suspected for some time. The UAR held demonstration firings in July 1962 of two different types of rockets for the foreign press and displayed ten of each type in the streets of Cairo. In this intelligence memorandum, the details of these developments have been summarized.

This Scientific Intelligence Memorandum is based on available information on the status of these various programs as of 1 December 1962. Throughout this paper the terms United Arab Republic and Egypt are used interchangeably.

CONTENTS

FIGURES

[redacted]

FIGURES (Continued)

[redacted]

THE UNITED ARAB REPUBLIC MISSILE PROGRAM

PROBLEM

To assess the missile program of the United Arab Republic.

CONCLUSIONS

1. The two types of rockets demonstrated to the press by the UAR on 21 July 1962 were sounding rockets developed in Egypt by West German technicians

2. The UAR is believed to be attempting to convert the larger sounding rocket, the Conqueror, into a surface-to-surface missile.

3. A smaller rocket, the Victor, is a facsimile of the French sounding rocket Veronique. Both were designed by the same German scientist.

4.

DISCUSSION

Preliminary Rocketry Program

The United Arab Republic has shown an intense interest in acquiring guided missiles since World War II and has approached most of the missile-producing nations of the world on this matter at one time or another. The UAR approach has included outright purchase, licensed manufacture in Egypt, and the recruitment of Western European technicians to develop rockets of relatively unique design. Figure 1 summarizes the major milestones leading toward a United Arab Republic missile capability.

In connection with the week-long celebrations of the 10th anniversary of the Egyptian revolution on 23 July 1962, the UAR displayed missiles of two different sizes as evidence of the country's scientific and technological achievement. The larger missile is called Al Kaher (Conqueror) and the smaller is called Al Zafer (Victor). Ten each of these missiles were paraded through the streets of

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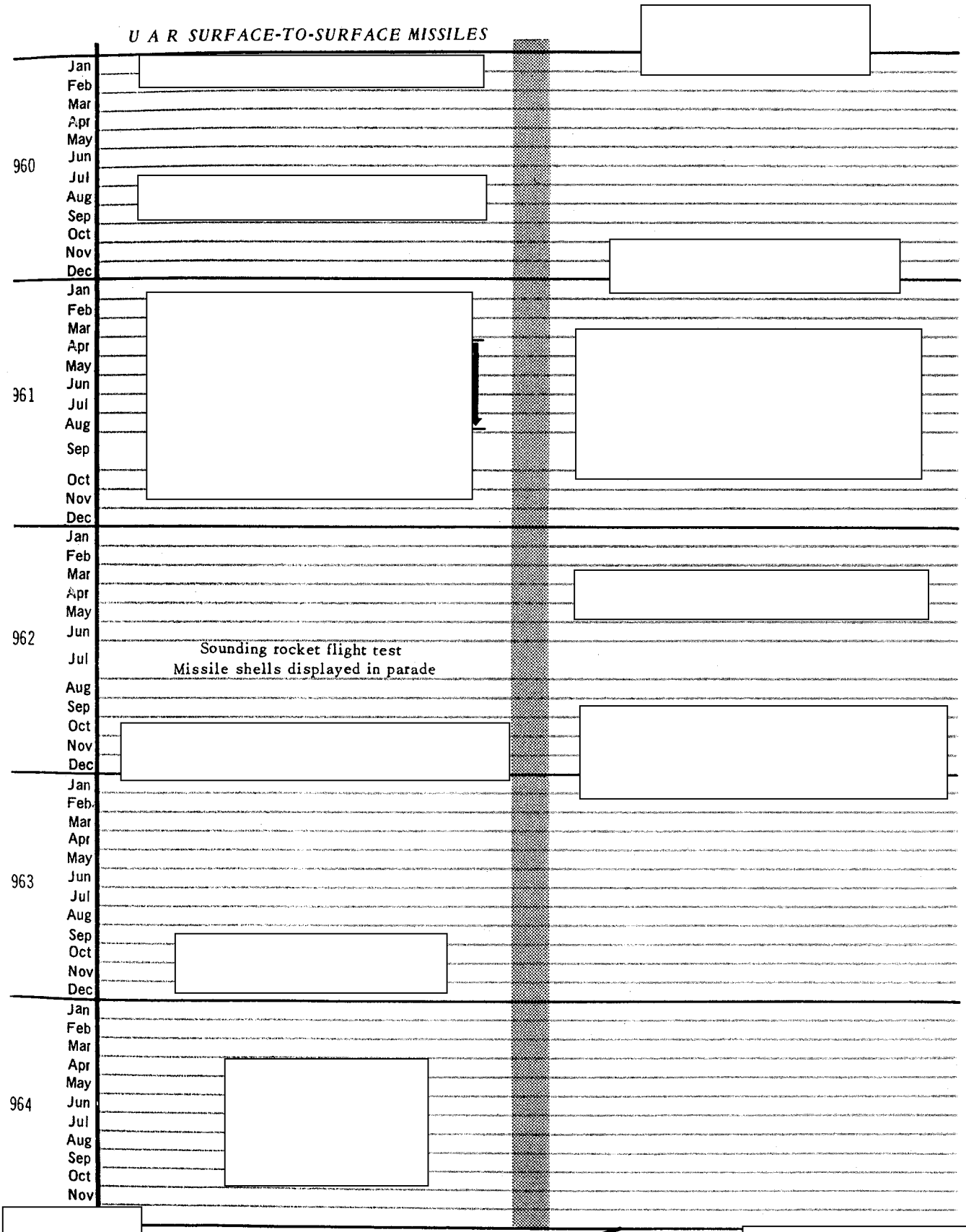
Figure 1

UNITED ARAB REPUBLIC
MISSILE PROGRAM MILESTONES



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Cairo. Two days before the parade, the press witnessed from a distance the firing of four missiles from a site in the desert some 50 miles northwest of Cairo. The UAR stated that two each of the parade missiles had been fired.

Development Under German Scientists -- The two UAR missiles displayed in the parade are the result of a development program which had its beginnings in early 1960 when the Egyptians approached the internationally known Dr. Eugen Saenger, Director of the Institute for the Physics of Jet Propulsion in Stuttgart, West Germany. According to Saenger, the Egyptians obtained advice concerning the development of a meteorological rocket for prestige purposes in view of Israeli work in the same field. Saenger and some of his associates undertook to assist the UAR in the development of a sounding rocket based on the French Veronique. Prominent among these associates were Dip. Eng. Wolfgang Pilz and Prof. Dip. Eng. Paul Goercke. Both Pilz and Goercke had worked at Peenemunde during World War II. Following the War, Pilz went to France and was employed by the Aerodynamics and Ballistics Research Institute at Vernon where he developed the Veronique, first as a surface-to-air unguided rocket and later as a meteorological sounding rocket (figure 2). Pilz and Goercke had been recruited by Saenger in 1958 for work at the Institute in Stuttgart. In 1953, Saenger had been approached by the Egyptians concerning development of missiles in Egypt but had refused because of his dislike of another German, Rolf Engel, who was technical director of the project.

The foregoing information illustrates that there are a number of technically competent Germans who are frustrated by the lack of opportunity to develop missiles in Germany and are readily recruitable by other countries for that purpose.

The chairman of the Israeli Astronautical Society announced plans for a test rocket on 25 January 1960.

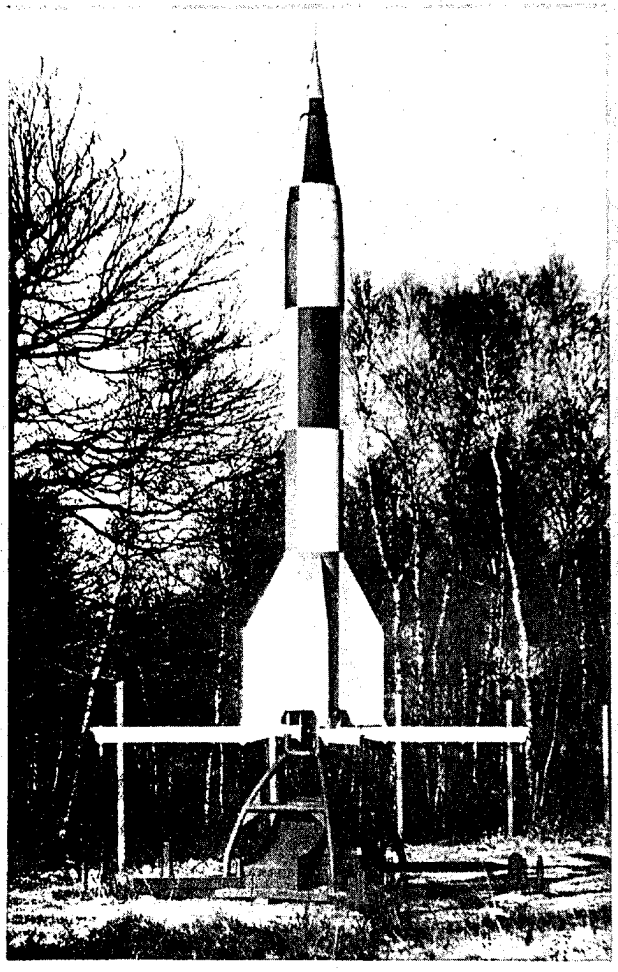

Figure 2. French Veronique Rocket

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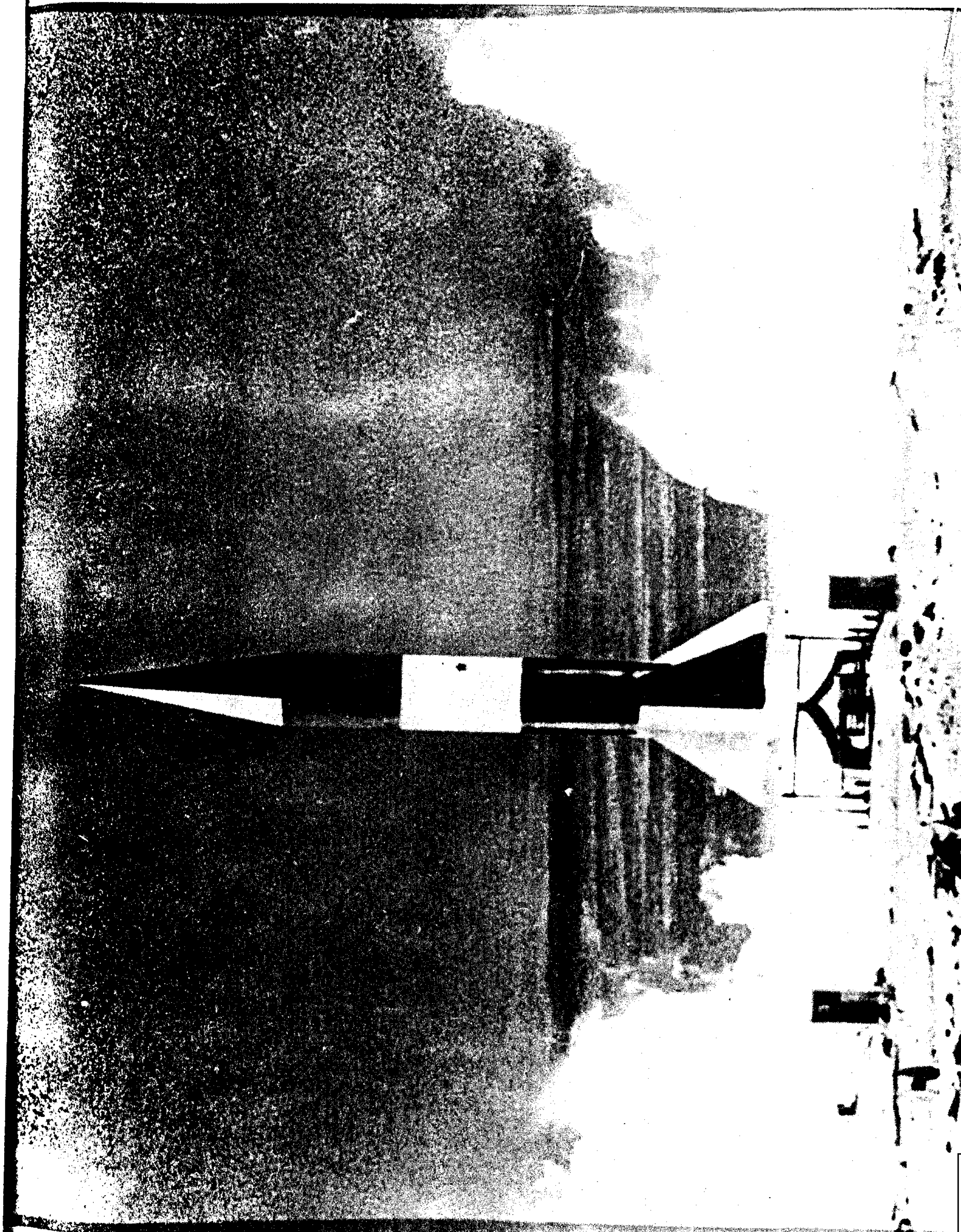

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Purchase of U.S. Sounding Rockets --

[redacted]

Surface-to-Surface Missiles

"The USSR is supplying tactical naval missiles to the UAR. Three KOMAR-class patrol boats armed with cruise missiles arrived on 6 December 1962. The cruise missile involved (SS-N-2) is a short range (10-15 NM) vehicle, two of which are provided as KOMAR missile armament" (figure 5).

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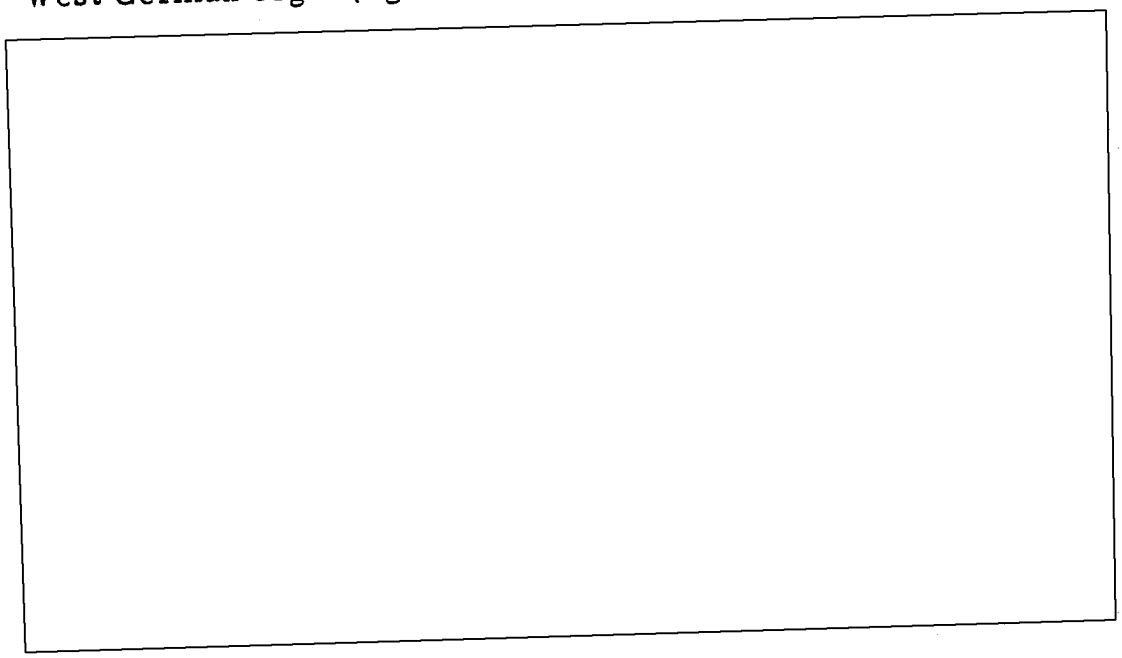
The missiles in the parade were transported on a hodge-podge of standard commerical vehicles of both Soviet and West German orgin (figure 6).



The Conqueror (Al Kaher) -- The Conqueror is a single-stage liquid-fueled rocket 33.74 feet long, with a tankage diameter of 3.64 feet and having a slight flare at the rear of the engine compartment. The rocket motor utilizes nitric acid as its oxidizer and turpentine as the fuel. It is reported by Saenger to develop a 17-ton thrust (sea level) utilizing a single combustion chamber. No pumps or turbines are required as the system is pressure fed. Weight at launch is 10 tons of which seven are fuel and oxidizer. At least the tankage was fabricated in West Germany.

The original concept was for a two-stage sounding rocket capable of lifting a 20-pound payload to an altitude of 270 miles. The Conqueror represents the first stage of the system.

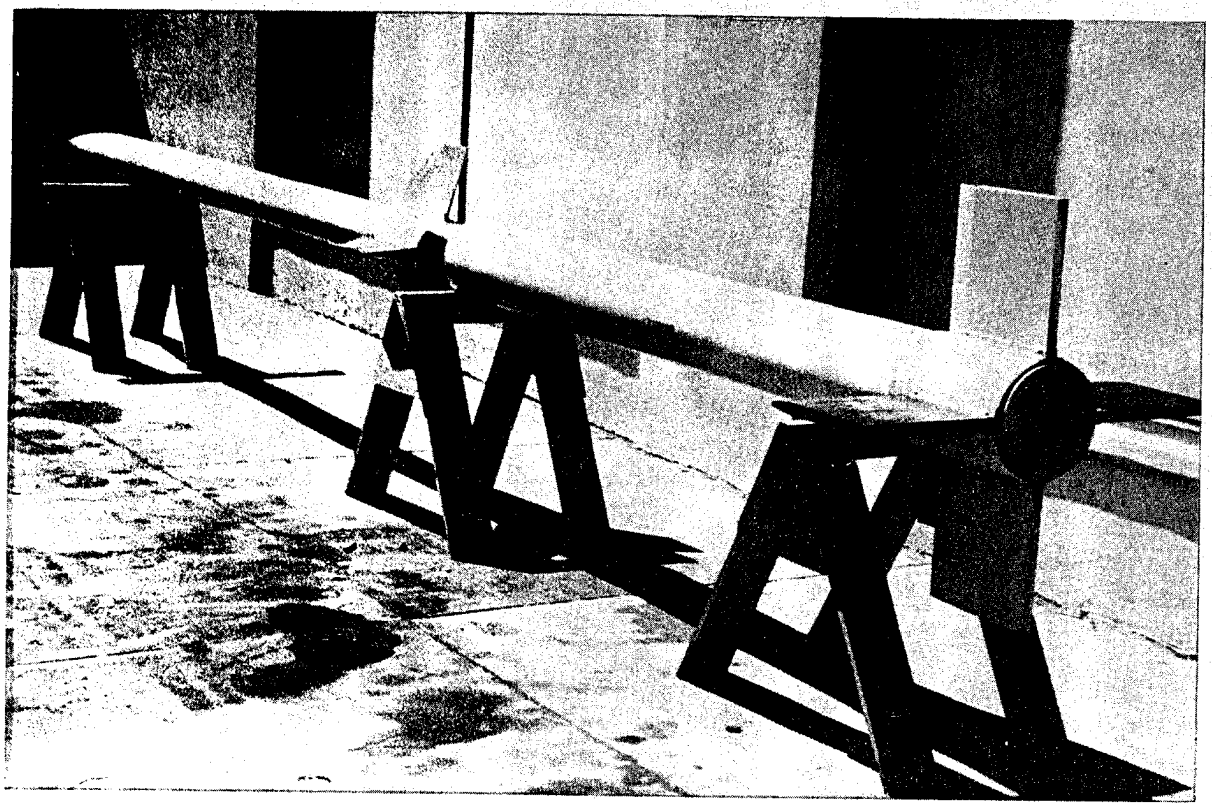


Figure 4 UAR: US ROCMIZ IV Sounding Rocket (Javelin/Viper)

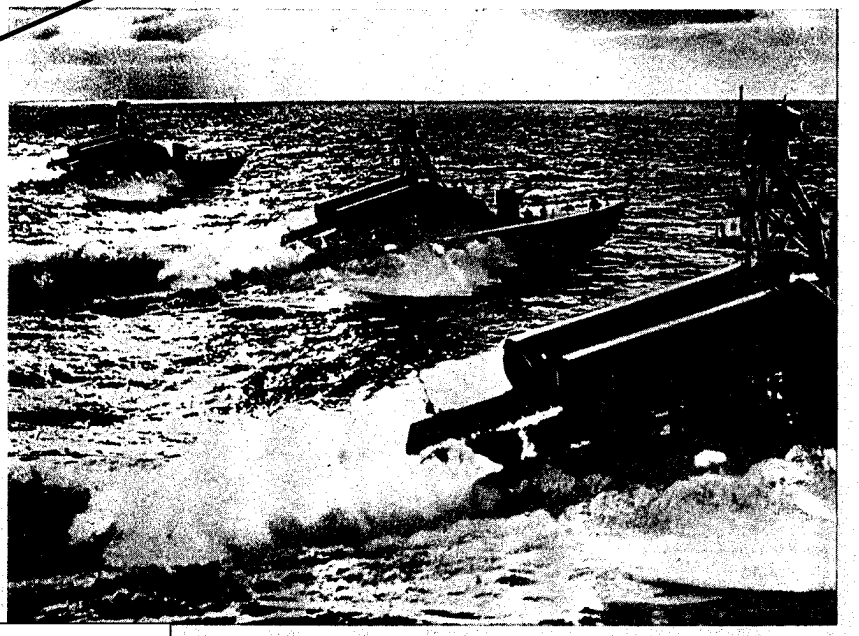


Figure 5. KOMAR-Class Guided Missile Patrol Boat.

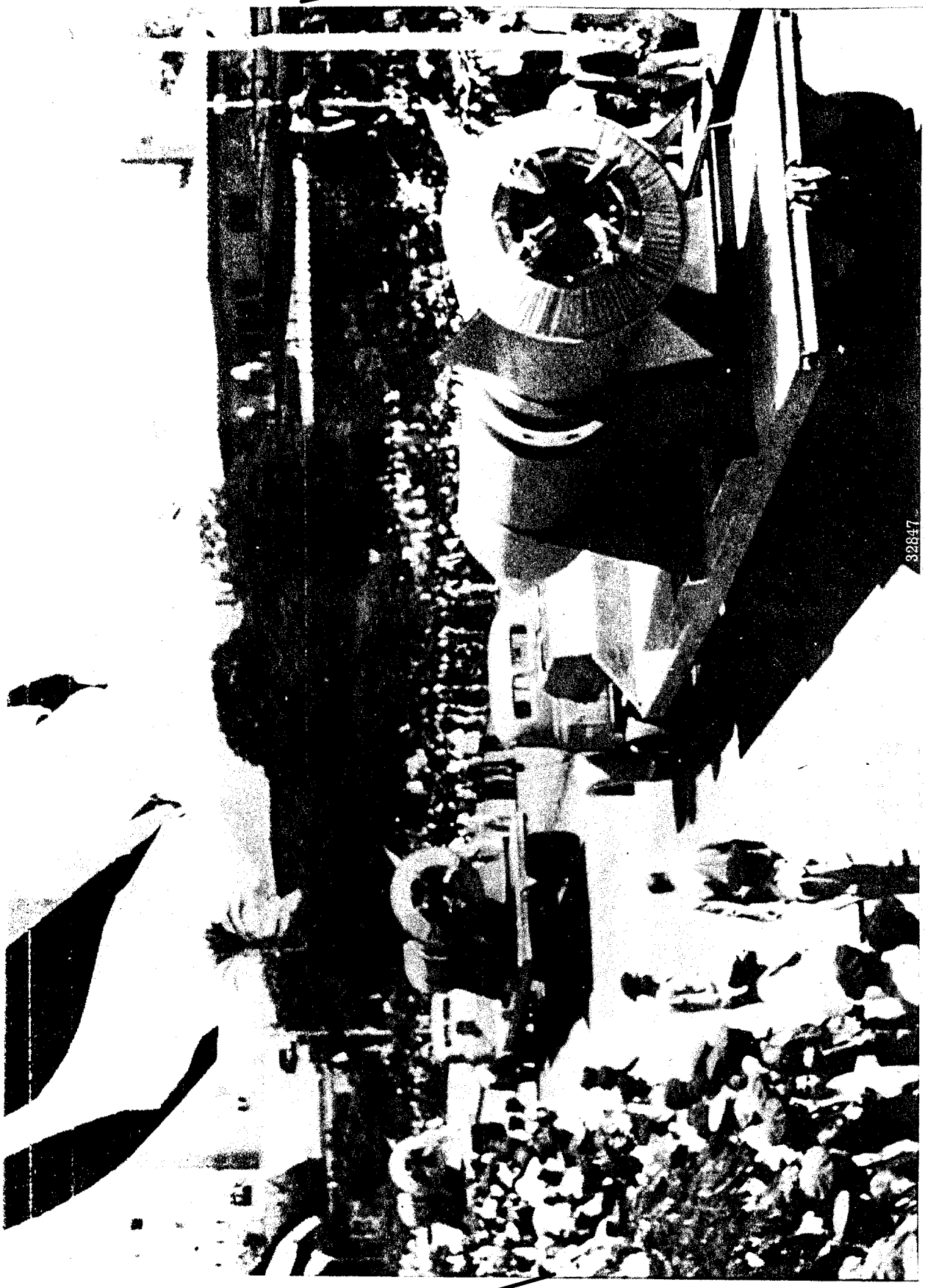


Figure 6. UAR: Missile Transport Equipment carrying Conqueror Missiles.

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Nasser and other Egyptian officials have alluded to the use of the Conqueror as a military weapons system.

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Photographs of the firings of the Conqueror on 21 July show it to have rather large fins, such as would be required to stabilize an unguided rocket. However, the version of the Conqueror displayed in the parade on 23 July has comparatively small fins and exhibits four jet vanes directly to the rear of the rocket motor similar to those utilized with the German V-2 vehicle.

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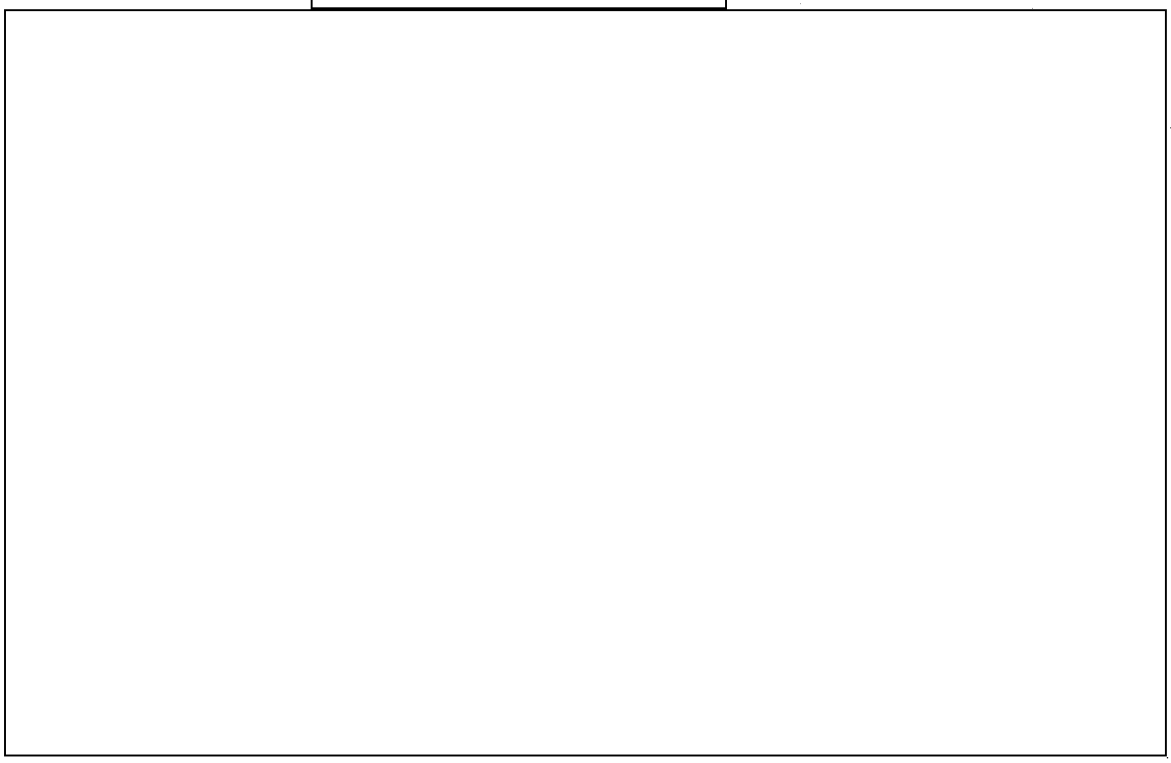
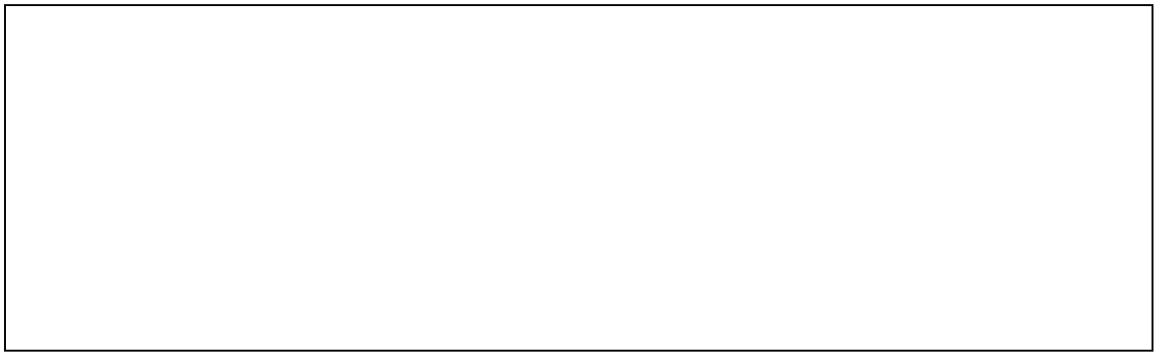


The Victor -- The Victor is a single-stage liquid-fueled sounding rocket whose critical external dimensions correspond quite closely with those of the French Veronique sounding rocket (figure 9). The Veronique was conceived in the late 1940's as an unguided surface-to-air rocket at the Aerodynamics and Ballistics Research Laboratory at Vernon, France, by an ex-member of the Peenemunde staff, Dip. Eng. Wolfgang Pilz. Because of its inability to engage supersonic targets, it was adapted by Pilz as a sounding rocket, which is wire-guided during the first few seconds of its flight.



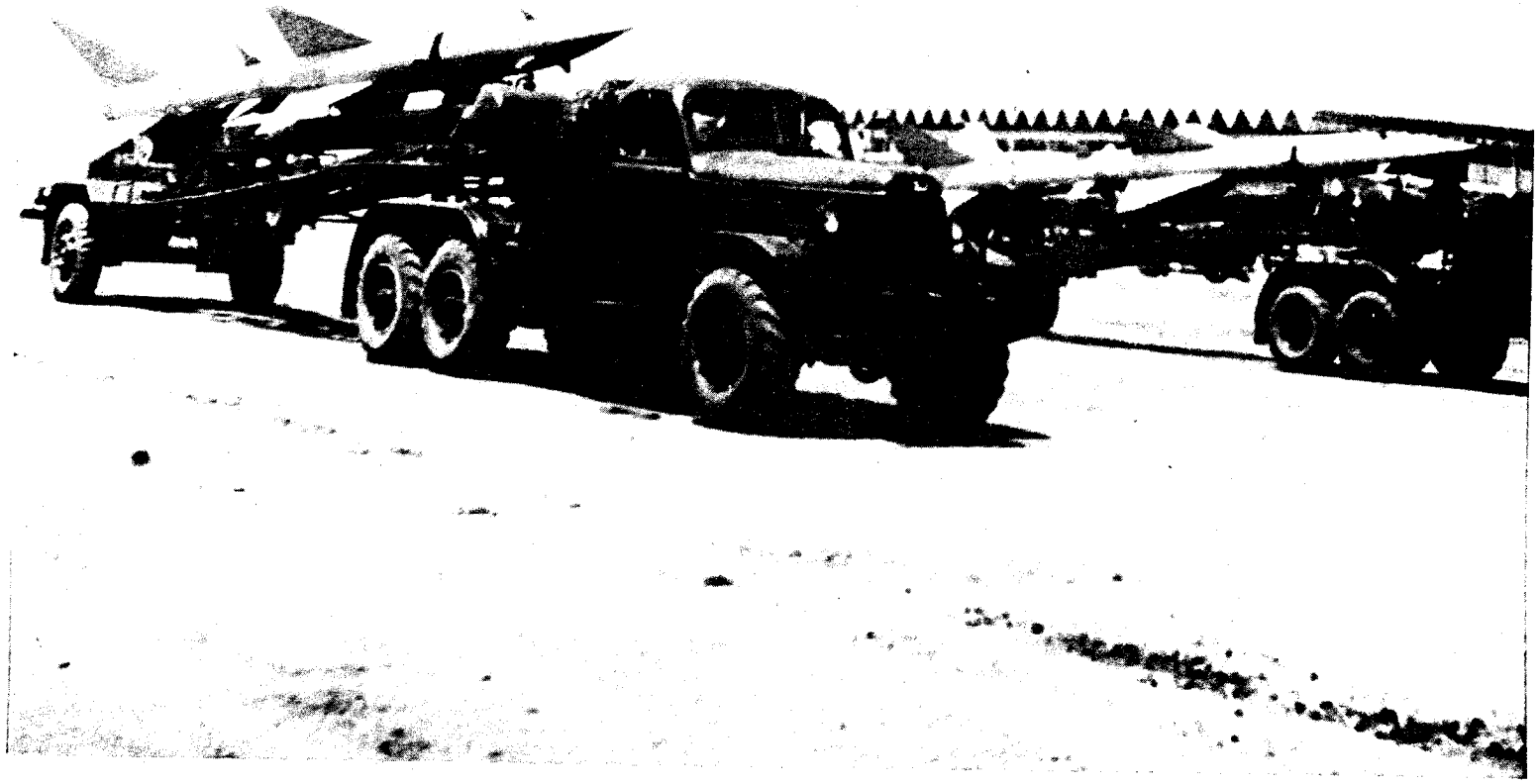


Figure 10. Soviet Guideline Missiles (SA-2) and Transporters

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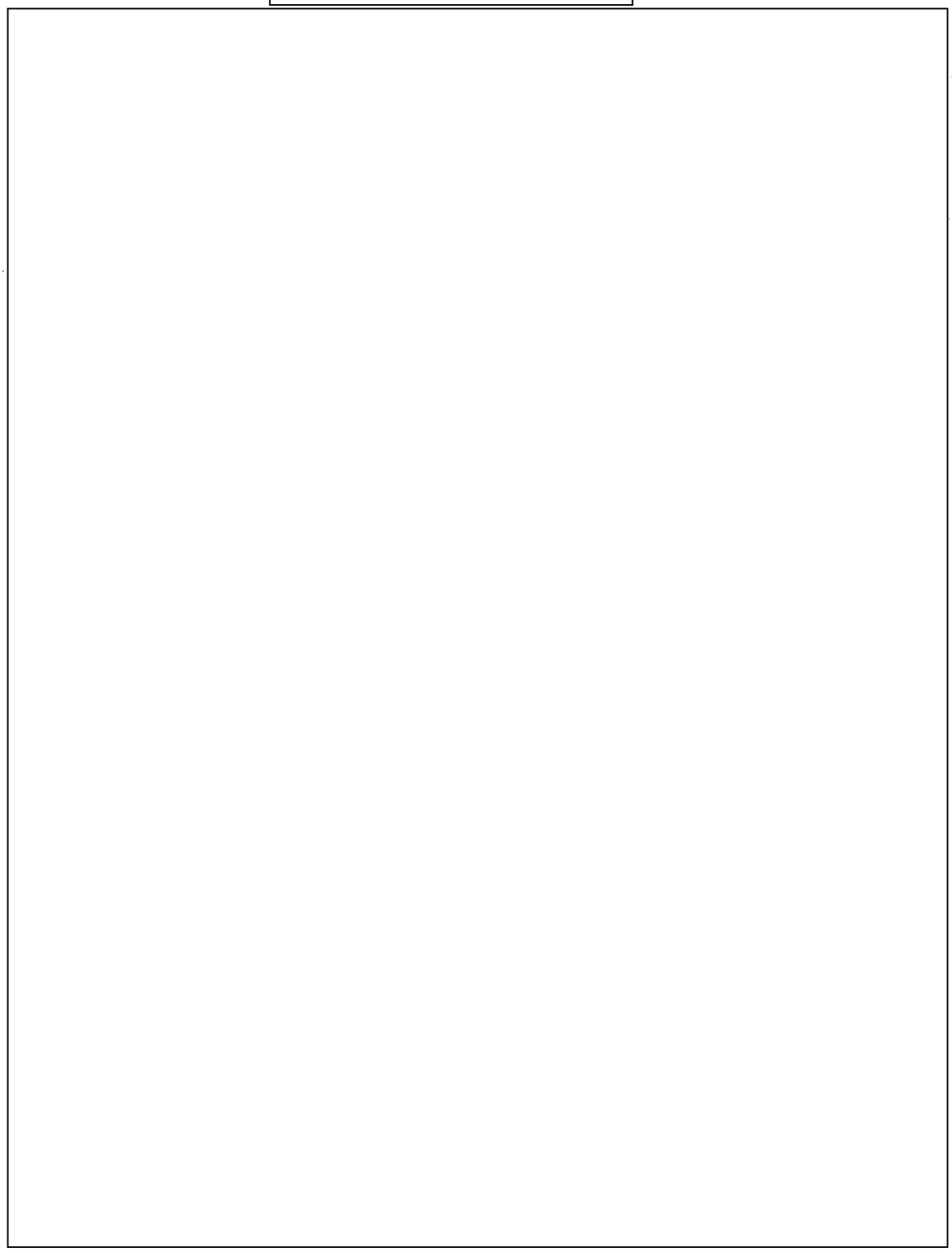
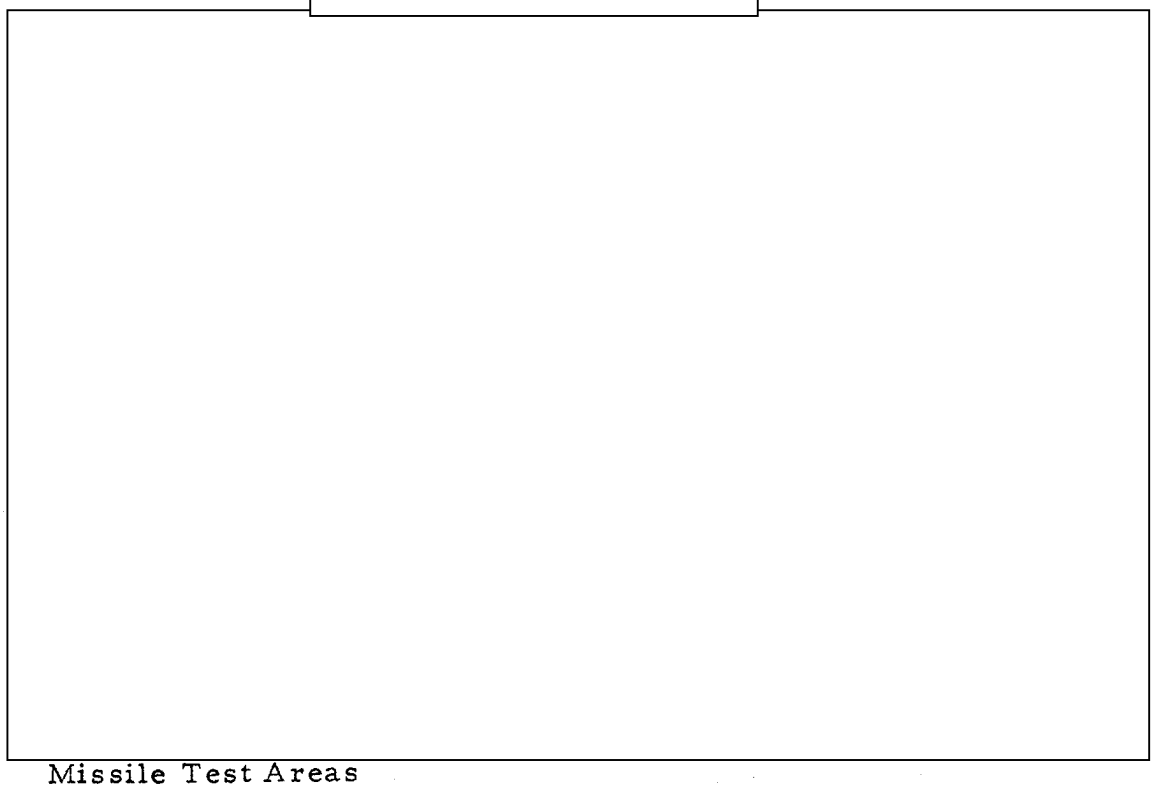
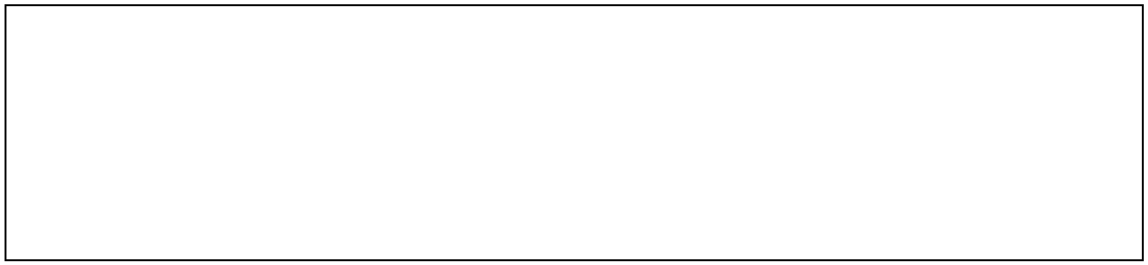




Missile Test Areas



1. An area 38 nautical miles northwest of Cairo and located just off the Alexandria road near the site of an old abandoned British airfield. The 21 July 1962 pre-parade firing demonstration took place at this site.

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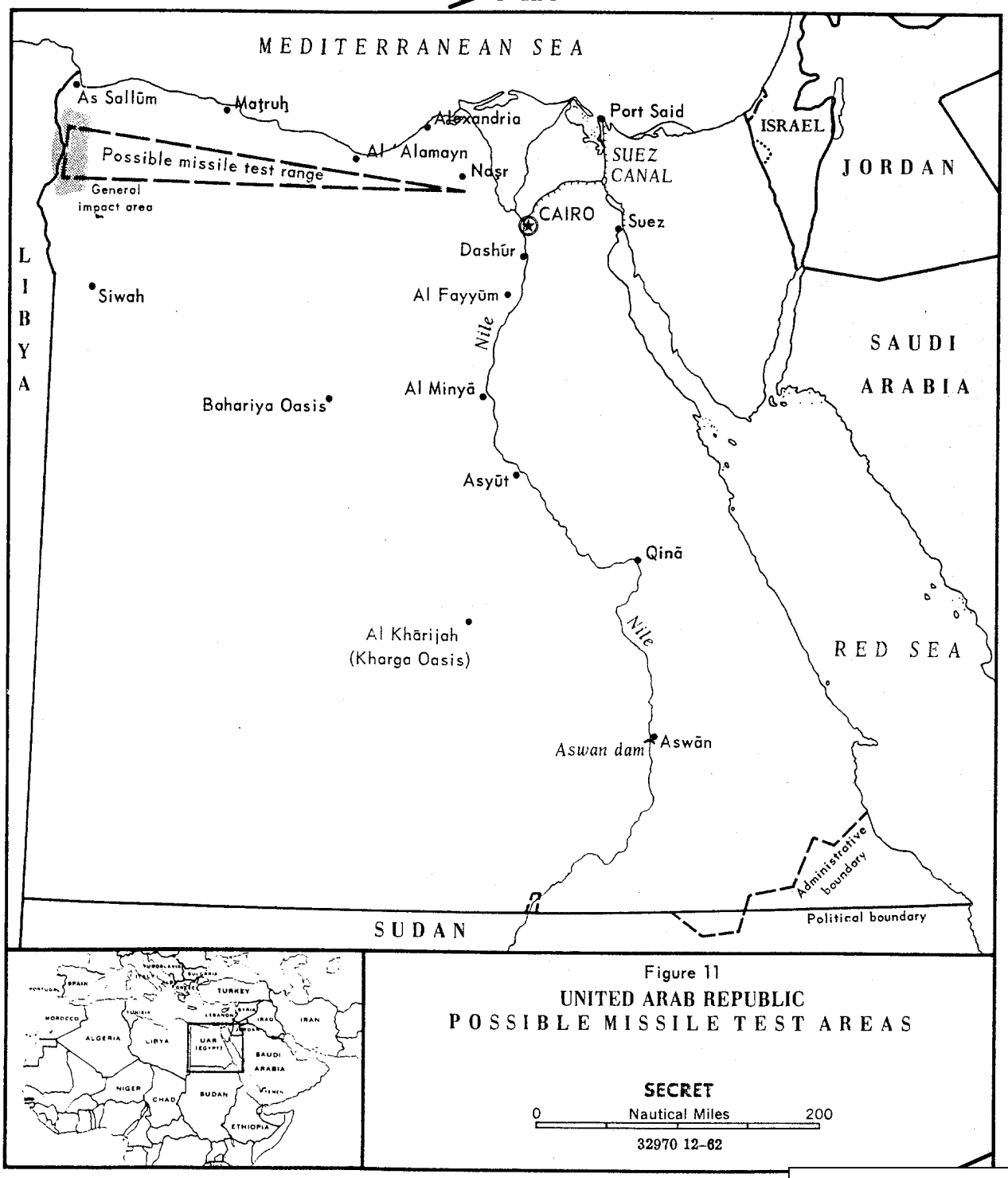

Figure 11
UNITED ARAB REPUBLIC
POSSIBLE MISSILE TEST AREAS

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3. [redacted]

4. [redacted]

Both the Kharga and the Bahariya oases are part of the New Valley Project, which has been publicized with programs to develop these desert areas into economically useful land. Vast areas have been surveyed in connection with this effort, and new unspecified industries introduced to the area. Publicity associated with this program has referred to the establishment of a Kharga workshop equipped with up-to-date machinery capable of undertaking maintenance and repair work, as well as the production of spare parts.

El-Kharga, the main center of the Kharga oasis, is connected with the Nile Valley (north of Naga-Hammadi) by a rail line 122 miles long. The Kharga oasis is bordered on the south by huge sand dunes.

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REFERENCES

[redacted]

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